

REMARKS

The Office Action dated January 30, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1-33 and 35-38 are currently pending in the subject application, including independent claims 1, 29, 37, and 38. In particular, Applicants have amended claims 1, 8, 15-16, 29-33, and 35-38, and Applicants have cancelled claim 34 without prejudice or disclaimer. It is respectfully submitted that the claim amendments add no new subject matter to the present application and serve only to more particularly point out and distinctly claim the subject matter that Applicants regard as the invention. Applicants urge that all grounds for rejection in the Office Action have been addressed and that the present application is currently in condition for allowance in view of the claim amendments, and the following explanations. Therefore, entry of the claim amendments and reconsideration of claims are respectfully requested.

As an initial observation, Applicants wish to express great appreciation for the indication given in the Office Action that claims 7, 15, 20, and 21 are objected to for depending from rejected claims but would be allowable if rewritten in independent form.

Rejection under 35 U.S.C. 102(b)

The Office Action rejected claims 1-3, 22-23, and 26-38 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,246,861 (Messier). Applicants respectfully

submit that Messier fails to disclose or suggest all of the features of any of the above claims.

Independent claim 1, from which claims 2-28 depend, is directed to a method in which at least one transmit diversity branch is determined for use based on estimated channel properties of at least two transmit diversity branches from a transmitter.

Independent claim 29, from which claims 30-33 and 35-36 depend, is directed to an apparatus that includes an establisher configured to establish estimated channel properties of at least two transmit diversity branches. A determiner in the apparatus is configured to determine transmit diversity branches for use based on the estimated channel properties.

Independent claim 37 is directed to a network apparatus for use in transmit diversity. The network apparatus element includes an establishing means for establishing estimated channel properties of at least two transmit diversity branches; and a determining means for determining transmit diversity branches for use based on the estimated channel properties.

Independent claim 38 recites a computer program embodied on a computer readable medium. The computer readable medium storing code includes computer executable instructions configured to perform the step of determining at least one transmit diversity branch for use based on estimated channel properties of at least two transmit diversity branches from a transmitter.

As described in Applicants' prior submissions, an advantage of the present invention that is achieved by determining at least one transmit diversity branch for use, is

that diversity gain can be obtained. Applicants submit that each of the above claims recites features that are neither disclosed nor suggested in Messier.

Messier teaches determining a location of a mobile phone by using signal strength measurements taken by the links. A processing unit then uses channel model equations to determine from these measurements, or from ratios derived from the measurements, the location of the mobile. In an example, the processing unit is given signal strength measurements for each mobile only as they become available or by the mobile on request from the processing unit.

In particular, Messier teaches determining location of a mobile phone in a cellular phone system. A mobile phone measures and communicates signal strength of received signals to base stations (B1-BN). The base stations return the signal strength measurements to an MSC (M1). A processing unit (10) connected to the MSC forms difference equations and uses these to determine the position of the mobile phone and a path loss exponent.

Applicants respectfully urge that Messier does not in any way relate to transmit diversity. As will known in the field of communications and as described in the present application, transmit diversity techniques require two or more transmit diversity branches from a single transmitter. The branches should be as uncorrelated as possible in order to maximize the diversity. *See, for example*, paragraph [0002] of the present application. Thus two uncorrelated, or largely uncorrelated, signals carrying effectively the same information will be received. *See, for example*, paragraph [0003] of the present application.

In contrast, Messier discloses that signal strength of signals from several base stations are measured at the mobile phone to obtain location of the mobile phone. There is however no mention in Messier of “at least two transmit diversity branches of a transmitter,” as currently recited in claim 1.

In particular, while Messier may arguably teach determining path loss exponents for signals from base stations to a mobile phone (not admitted), this disclosure is not equivalent to “determining at least one transmit diversity branch” as recited in claim 1 because no transmit diversity branches are taught or needed in Messier. There simply is no need in Messier for the determining of Applicants’ claim 1.

In contrast, as described above, Messier is entirely silent as to transmit diversity. Applicant therefore urge that Messier also does not disclose at least the recitation of “determining at least one transmit diversity branch for use.”

Therefore, claim 1 is allowable over Messier since the reference does not disclose every recited limitation of the claim; the rejection should therefore be withdrawn. Reconsideration and allowance of claim 1 in view of these arguments are respectfully requested. Likewise, claims 2-28 depend from claim 1 and should be allowable over Messier on similar grounds. Reconsideration and allowance of claims 2-28 in view of these arguments are further respectfully requested.

Independent claims 29, 37, and 38, although of different scope from claim 1, contain similar recitations and should be allowed on similar grounds. Likewise, claims 30-33 and 35-36 depend from either claims 29 or 34 and should be similarly allowable.

Reconsideration and allowance of claims 29-38 in view of these arguments are further respectfully requested.

Based at least on the above, Applicants submit that Messier fails to disclose or suggest all of the features of claims 1-3 and 22-23 and 26-33 and 35-38. Accordingly, withdrawal of the rejection under 35 U.S.C. 102(b) is respectfully requested.

Claim Rejection under 35 U.S.C. §103(a)

The Office Action rejected claim 4 under 35 U.S.C. 103(a) as being obvious over Messier, in view of U.S. Patent No. 6,097,956 (Veeravalli). The Office Action took the position that Messier disclosed most of the features of these claims except determining the at least one transmit diversity branch for use comprises taking into account a required outage probability. The Office Action asserted that Veeravalli disclosed this feature. Applicants respectfully submit that the cited references, taken individually or in combination, fail to disclose or suggest all of the features of any of the above claims. Specifically, Messier is deficient at least for the reasons discussed above regarding claim 1, and Veeravalli fails to cure these deficiencies at least for the reasons discussed herein.

As described above, Messier fails to disclose each and every limitation of claim 1. Veeravalli does not cure the deficiencies in Messier.

As described in the Applicants' prior submission, Veeravalli is directed to calculation of the probability of outage for a cell within a CDMA network is utilized to relate cell coverage to cell capacity. Based on a desired probability of outage, the coverage of the cell may be calculated for an average number of users within the cell.

The calculation is independent of the admission policy employed to achieve the specified average number of users. The resulting closed form expression for the tradeoff between coverage and carried traffic allows an optimal design of a CDMA network. However, Veeravalli fails to disclose or suggest “determining at least one transmit diversity branch for use based on estimated channel properties of transmit diversity branches”. Thus, Veeravalli fails to cure the deficiencies of Messier.

Based at least on the above, Applicants submit that the cited references fail to disclose or suggest all of the features of claim 4. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

The Office Action rejected claims 5, 6, 8, 10 and 11 under 35 U.S.C. 103(a) as being obvious over Messier, in view of U.S. Patent No. 5,524,275 (Lindell). The Office Action took the position that Messier disclosed most of the features of these claims except determining the at least one transmit diversity branch for use based on said estimated channel properties comprising expected powers of transmit diversity branches. The Office Action asserted that Lindell disclosed this feature. Applicants submit that the cited references, taken individually or in combination, fail to disclose or suggest all of the features of any of the pending claims. Specifically, Messier is deficient at least for the reasons discussed above regarding claim 1, and Lindell fails to cure these deficiencies at least for the reasons discussed herein.

As described above, Messier fails to disclose each and every limitation of claim 1. Lindell does not cure the deficiencies in Messier.

In particular, as described in the Applicants' prior submission, Lindell is directed to a radio transmitter output power controller which automatically restricts the maximum transmitting time during an averaging time so that the average power remains below an acceptable level. Additionally or alternatively, the maximum transmitter output power may be automatically reduced to a lower level if and when a predetermined average power level is approached. A warning signal may be generated to inform a user that the maximum permitted power output is being approached. However, Lindell fails to disclose or suggest the feature of "determining at least one transmit diversity branch for use based on estimated channel properties of transmit diversity branches". Thus, Lindell fails to cure the deficiencies of Messier.

Based at least on the above, Applicants respectfully submit that the cited references fail to disclose or suggest all of the features of claims 5, 6, 8, 10 and 11. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

Claim 9 is rejected under 35 U.S.C. 103(a) as being obvious over Messier and Lindell, in further view of U.S. Patent No. 6,415,283 (Conklin). The Office Action took the position that Messier and Lindell disclosed most of the features of claim 9 except evaluating the transmit diversity performance indicator for transmit diversity branch sets using a tree structure, a transmit diversity branch set relating to a child node having less transmit diversity branches than a transmit diversity branch set relating to a parent node of the child node. The Office Action asserted that Conklin disclosed these features. Applicants submit that the cited references, taken individually or in combination, fail to

disclose or suggest all of the features of any of the pending claims. Specifically, Messier and Lindell are deficient at least for the reasons discussed above and Conklin fails to cure these deficiencies at least for the reasons discussed herein.

As described above, Messier and Lindell fail to disclose each and every limitation of claim 1. Conklin does not cure the deficiencies in Messier and Lindell.

As described in the Applicants' prior submission, Conklin is directed to a cluster processing system that determines at least one focal node on a hierarchically arranged tree structure of nodes based on attributes of a data set. The data set comprises a plurality of data set attributes with associated weight values. The cluster processing system selects a set of nodes from the tree structure with tree structure attributes that correspond with the data set attributes, and then assigns quantitative values to nodes in the set of nodes from the weight values in the data set. At least one cluster of nodes is selected, based on proximity in the tree structure, and at least one focal node on the tree structure for the cluster of nodes is selected. The focal node comprises an attribute most representative of the data set attributes. A terminological system learns the meaning of terms by identifying categories from a knowledge catalog. However, Conklin fails to disclose or suggest the feature of "determining at least one transmit diversity branch for use based on estimated channel properties of transmit diversity branches". Thus, Conklin fails to cure the deficiencies of Messier and Lindell.

Based at least on the above, Applicants respectfully submit that the cited references fail to disclose or suggest all of the features of claim 9. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

The Office Action rejected claims 12-14, 16, 18 and 19 under 35 U.S.C. 103(a) as being obvious over Messier, in view of U.S. Patent No. 5,956,649 (Mitra). The Office Action took the position that Messier disclosed most of the features of these claims except determining the at least one transmit diversity branch for use based on the estimated channel properties comprising second order statistics of channel coefficients of transmit diversity branches. The Office Action asserted that Mitra disclosed this feature. Applicants submit that the cited references, taken individually or in combination, fail to disclose or suggest all of the features of these claims. Specifically, Messier is deficient at least for the same reasons discussed above regarding claim 1, and Mitra fails to cure these deficiencies at least for the reasons discussed herein.

As described above, Messier fails to disclose each and every limitation of claim 1. Mitra does not cure the deficiencies in Messier.

As described in the Applicants' prior submission, Mitra is directed to using a set of parameters characterizing an interference signal at a base unit for determining power levels for signals transmitted from a communications device to the base unit. The set of parameters comprises second or higher order statistics characterizing the interference signal, and the parameters are used to determine a desired power level for signals received at the base unit. The desired power level is communicated to a communications device via a pilot signal transmitted by the base unit at a predetermined level. The predetermined level and the power of the received pilot signal are used to compute a path gain between the base unit and communications device. The path gain and desired power level are then used to determine the power level of signals transmitted from the

communications device to the base unit. However, Mitra fails to disclose or suggest the feature of “determining at least one transmit diversity branch for use based on estimated channel properties of transmit diversity branches”. Thus, Mitra fails to cure the deficiencies of Messier.

Based at least on the above, Applicants respectfully submit that the cited references fail to disclose or suggest all of the features of claim 12-14, 16, 18 and 19. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

The Office Action further rejected claim 17 under 35 U.S.C. 103(a) as being obvious over Messier and Mitra, in further view of Conklin. The Office Action took the position that Messier and Mitra disclosed all of the features of claim 17 except evaluating said transmit diversity performance indicator for transmit diversity branch sets using a tree structure, a transmit diversity branch set relating to a child node having less transmit diversity branches than a transmit diversity branch set relating to a parent node of the child node. The Office Action asserted that Conklin disclosed these features. Applicants respectfully submit that the cited references, taken individually or in combination, fail to disclose or suggest all of the features of any of the above claims. Specifically, Messier and Mitra are deficient at least for the reasons discussed above and Conklin, as discussed above, fails to cure these deficiencies.

Based at least on the above, Applicants submit that the cited references fail to disclose or suggest all of the features of claim 17. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

The Office Action further rejected claims 24 and 25 under 35 U.S.C. 103(a) as being obvious over Messier in view of U.S. Patent No. 6,317,411 (Whinnet). The Office Action took the position that Messier disclosed all of the features of claims 24 and 25 except for estimating channel properties using channel coefficients at a transmitter or estimating channel properties using channel coefficients at a receiver. The Office Action then asserted that Whinnet disclosed these features. Applicants respectfully submit that the cited references, taken individually or in combination, fail to disclose or suggest all of the features of any of the above claims. Specifically, Messier is deficient at least for the reasons discussed above and Whinnet fails to cure these deficiencies.

As described above, Messier fails to disclose each and every limitation of claim 1. Whinnet does not cure the deficiencies in Messier.

As described in the Applicants' prior submission, Whinnett is directed to reducing the effect of multipath fading. According to Whinnet, a stream of symbols to be transmitted is received at a "commutator." The commutator sends alternate symbols to one spreader and the other symbols to another spreader. Two antennas, each connected to one of the spreaders, then transmit the spread symbols. Characteristics of the path that the signals follow from each antenna are measured using a pilot signal at a receiver, and are described by channel coefficients. The received symbols are respectively multiplied by a value derived from the coefficient for the path on which the symbols were transmitted. Transmit power is reduced for the same quality of service because different symbols experience different gains, which lowers the likelihood that a pair of consecutive symbols will simultaneously experience a deep fade.

Applicants respectfully submit that Whinnett fails to disclose or suggest at least the feature of “determining at least one transmit diversity branch for use based on estimated channel properties of transmit diversity branches”, as recited in claim 1 and similarly recited in claims 29 and 34. According to Whinnett, all (that is both) branches are always used since different symbols are transmitted over each branch. Thus, Whinnett is silent with regards to a determination of transmit diversity branches since neither of the branches in Whinnett is excluded. See Figures 1 to 3 in Whinnett. Accordingly, Whinnett fails to disclose or suggest all of the features of claims 1, 29 and 34, and 37. Thus, Whinnett fails to cure the deficiencies of Messier.

Based at least on the above, Applicants respectfully submit that the cited references fail to disclose or suggest all of the features of claims 24-25. Accordingly, withdrawal of the rejection under 35 U.S.C. 103(a) is respectfully requested.

The Office Action objected to claims 7, 15, 20, and 21 as being dependent from a rejected base claim, but these claims would be allowable if rewritten into independent form. Applicants submit that because these claims depend from allowable claim 1, they are allowable at least for the same reasons as claim 1. Accordingly, withdrawal of the objection to claims 7, 15, 20 and 21 is respectfully requested.

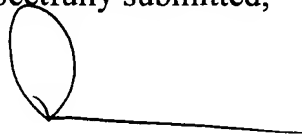
As discussed above, each of the pending claims 1-33 and 35-38, including independent claims 1, 29, 37, and 38, recites subject matter which is neither disclosed nor suggested in the cited references. Applicants submit that the recited subject matter is more than sufficient to render the invention non-obvious to a person of ordinary skill in the art. It is respectfully requested that independent claims 1, 29, 37, and 38 and the

related dependent claims be allowed in view of the above arguments, comments, and remarks and that the present application be allowed to pass to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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